The Thesis Committee for Nicole Jee Wen
Certifies that this is the approved version of the following thesis:

Ritual Increases Children's Preferences for In-Group Members

APPROVED BY
SUPERVISING COMMITTEE:

Supervisor:

Cristine H. Legare

Art B. Markman

Ritual Increases Children's Preferences for In-Group Members

by

Nicole Jee Wen, B.S. Psy.; B.A.

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Abstract

Ritual Increases Children's Preferences for In-Group Members

Nicole Jee Wen, M.A.

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Supervisor: Cristine H. Legare

This study examined the impact of ritual on children's in-group affiliation (N = 71, 4-11-year-old children). A novel social group paradigm was used in an afterschool program setting to test the influence of a ritual versus a control task on three key outcomes—affiliation with in-group members, expectations for inclusion by in-group members, and selective group fusion with in-group members. Results from converging measures support the hypothesis that the experience of participating in a ritual increases in-group preference to a greater degree than group activity alone. The results provide insight into the early-developing preference for in-group members and are consistent with the proposal that rituals facilitate in-group cohesion.

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Chapter 1: Introduction

Recent convergent developments in cognitive science (Legare & Souza, 2012; Rossano, 2012), social psychology (Norton & Gino, 2014; Swann, Jetten, Gomez, Whitehouse, & Bastain, 2012; Vohs, Wang, Gino, & Norton, 2013; Whitehouse, McQuinn, Buhrmester, & Swann, 2014) and evolutionary anthropology (Atkinson & Whitehouse, 2011; Boyer & Liénard, 2006; Henrich, 2009; Ruffle & Sosis, 2007; Sosis, 2005; Whitehouse, 2012) have opened up new avenues for research on ritual, a psychologically understudied yet pervasive feature of human social group cognition and behavior. The dearth of psychological research on this topic is striking given that ritual is a universal cultural phenomenon and has been the focus of extensive anthropological inquiry. Anthropologists have long proposed that rituals demonstrate commitment to in-group members by signaling group member identity, promoting interpersonal bonding, and creating shared beliefs (Bell, 1997; Durkheim, 1912; Geertz, 1973; Gluckman, 1954 Humphrey & Laidlaw, 1994; Rappaport, 1999; Turner, 1969; Whitehouse & Lanman, 2014).

The current thesis reviews literature on ritual as it relates to social group cognition. For the purposes of the current study, I will specifically review further literature examining children's group cognition. Additionally, I will discuss conventional learning and the features of ritual that facilitate social group cohesion.

SOCIAL GROUP COGNITION

There is substantial evidence that humans have evolved a variety of psychological adaptions for group living (Caporael, 1997; Kurzban & Neuberg, 2005; Richerson, Boyd,

& Henrich, 2003; Tooby, Cosmides, & Price, 2006). Social group cognition develops early in human ontogeny and is developmentally privileged (Killen & Rutland, 2011). Young children are well prepared to become members of social groups (Diesendruck, Goldfein-Elbaz, Rhodes, Gelman, & Neumark, 2013; Diesendruck & Markson, 2011; Legare & Watson-Jones, in press). Young children view social categories as having a stable, unchanging psychological "essence" (Hirschfield, 1996; Gelman, Heyman, & Legare, 2007; Rhodes, 2012).

The propensity for social categorization is so strong, in fact, that simply placing individuals into arbitrary groups activates in-group biases among adults (Billig & Tajfel, 1973; Diehl, 1990; Tajfel, 1970; Tajfel, Billig, Bundy, & Flament, 1971; Tajfel & Turner, 1985) and children (Abrams & Rutland, 2008; Dunham, Baron, & Banaji, 2008). For example, when children experience novel social groups (i.e., based on t-shirt color) they have expectations for in-group reciprocity, positive behavioral attributions for the in-group, and preferences for in- over out-group members (Dunham, Baron, & Cary, 2011). There is also evidence that children preferentially interact with in-group members (Kinzler, Dupoux, & Spelke, 2007).

CONVENTIONAL LEARNING

To coordinate behavior for cooperative efforts, children must learn and adhere to the norms and conventions of their social groups through a process of imitation (Kalish, 2005) and social learning (Heyes & Frith, 2014). Even young children tacitly accept status assignments, rules, and prescriptions and expect others to do the same (Diesendruck & Markson, 2011). They also readily engage in normative protest when

rules are violated (Rakoczy, Warneken, & Tomasello, 2008). By 4-years-old, children attribute conventional knowledge selectively to in-group members (Diesendruck, 2005) and display distinct preferences for members of their in-group (Dunham et al., 2008; Dunham et al., 2011; Nesdale & Flesser, 2001; Rhodes, 2012; Sherif, Harvey, White, Hood, & Sherif, 1961). Young children placed within groups expect group members to behave in conventional ways (customs, traditions, and etiquette) and can differentiate conventional from moral rules (Killen & Rutland, 2011; Smetana, 2006; Turiel, 1998). Even infants expect members of social groups to act similarly (Powell & Spelke, 2013) and are more likely to imitate members of an in-group than an out-group (Buttelman, Zmyj, Daum, & Carpenter, 2013).

Children are also acutely sensitive to relations among individuals (Chudek, Heller, Birch, & Henrich, 2012; Kalish, 2013; Nielsen & Blank, 2011), particularly to whether two or more individuals act or make judgments in the same way (Corriveau, Fusaro, & Harris, 2009; Pasquini, Corriveau, Koenig, & Harris, 2007). Children conform to a group consensus in situations where no instrumental knowledge can be gained and disguise their correct opinions to conform to a group consensus (Haun & Tomasello, 2011; Haun, Rekers, & Tomasello, 2014).

Recent developmental research on the cognitive developmental foundations of ritual has examined imitative behavior as a means of affiliation with social groups (Herrmann, Legare, Harris, & Whitehouse, 2013; Legare & Herrmann, 2013; Legare & Watson-Jones, in press; Legare & Wen, 2014; Legare, Wen, Herrmann, & Whitehouse, in press; Watson-Jones, Legare, Whitehouse, & Clegg, 2014). High fidelity imitation in

children has been linked to social concerns (Nielsen, 2006; Over & Carpenter, 2012), such as encoding normative behavior (Kenward, Karlsson, & Perssson, 2011; Nielsen, Kapitány, & Elkins, 2014) and fear of ostracism (Over & Carpenter, 2009). There is evidence that motor mimicry functions as an affiliative response in reaction to social exclusion among adults (Lakin, Chartrand, & Arkin, 2008), perhaps because individuals cope with ostracism by engaging in behaviors aimed at reinclusion (see Williams & Nida, 2011 for a review). Adults also engage in more motor mimicry of in-group members than out-group members (Bourgeois & Hess, 2008).

Rituals Facilitate Group Cohesion

I hypothesize that the performance of socially shared rituals amplifies the early developing and empirically documented preference for in-group members over out-group members. This hypothesis is consistent with new research investigating the extent to which rituals function as a mechanism for increasing social group cohesion (Whitehouse & Lanman, 2014). Rituals, which I define as conventional, causally opaque procedures, are uninterpretable from the perspective of physical causality because they lack an intuitive or observable causal connection between the specific action performed (e.g., rubbing a ceramic pot) and the desired outcome or effect (e.g., making it rain) (Legare & Souza, 2012, 2014; Sørensen, 2007). Rituals are also the result of "a positive act of acquiescence in a socially stipulated order" and are not the product of individual innovation (Humphrey & Laidlaw, 1994, p. 5). I propose that rituals facilitate high fidelity cultural transmission and serve as social identity markers because they are

causally opaque, socially stipulated group conventions, making them resistant to individual innovation and change (Legare & Watson-Jones, in press).

There are several frequently co-occurring features of rituals that I hypothesize make them ideal candidates for amplifying social group affiliation and cohesion. Rituals are socially scripted, are frequently accompanied by normative or conventional language, and involve behavioral coordination or synchrony within groups (Hove & Risen, 2009; Kirschner & Tomasello, 2010; Marsh, Richardson, & Schmidt, 2009; Wiltermuth & Heath, 2009). New developmental research has documented that characteristic features of ritual have effects on imitative fidelity, a measure of affiliation. Children engage in higher imitative fidelity after (a) witnessing start- and end-state equivalence in an action sequence (Legare et al., in press; Watson-Jones et al., 2014), (b) hearing conventional language (e.g., "everyone does it this way") rather than instrumental language (e.g., "she makes a necklace") (Herrmann et al., 2013; Legare et al., in press), (c) observing multiple actors engage in the same behavior versus observing one actor engage in the same behavior multiple times (Herrmann et al., 2013), and (d) observing behavior done in synchrony versus in succession (Herrmann et al., 2013). In the current study, rather than attempt to examine the effects of each of these features independently, my objective was to examine their cumulative effects compared to a matched social group experience. Does participating in a ritual increase preferences with in-group members to a greater extent than group membership alone?

THE CURRENT STUDY

Despite the large literature on children's reasoning about social groups, this is the first study to my knowledge examining the role of ritual participation on children's affiliation with in-group members. A novel social group paradigm (Tajfel, 1970) was used to examine the hypothesis that the experience of participating in a ritual may increase preference for in-group members, an effect I predicted to be greater than experiencing social group activity alone. Across conditions, children were first assigned to a novel social group in an afterschool program setting (i.e., yellow group or a green group). In the ritual condition, children in each group participated in a scripted, synchronous necklace-making task that was demonstrated by a group leader. In the control condition, children in each group participated in a non-scripted necklace-making task that was supervised by a group leader. The language children heard to describe each group and the amount of social experience in a group setting was identical across conditions.

I predicted that children in the ritual condition would demonstrate stronger effects than children in the control condition on multiple measures of in-group preference including: (1) making more choices to affiliation with their in-group, (2) attributing greater expectations for in-group inclusion of new in-group members, and (3) psychologically fusing with their in-group over their out-group. I also predicted that in the ritual condition, (4) children's memory of the in-group ritual would correlate with the measures of in-group preference.

Chapter 2: Methods

PARTICIPANTS

Demographic Information

Seventy-one 4-11-year-olds (30 female; M_{age} = 7 years, 4 months; range = 4 years, 2 months to 11 years, 6 months) were recruited at two afterschool program locations in the American southwest. Participants were primarily from working-class families (66% of children attending school at the locations tested are economically disadvantaged) and were ethnically diverse (66% Hispanic, 23% White, 9% African-American, 2% other ethnicities) based on school district records.

Determining Sample Size

Sample size was determined prior to data collection via power analysis using a predicted effect size of d = 0.80 based on previous research using similar experimental paradigms. The power analysis suggested a sample size of 26 subjects per group, power (1- β err prob) = .80. I concluded data collection when I ran the study in two schools (one per condition). My sample size (N = 71) exceeded the suggested sample size (N = 52) because I collected data from all consented individuals, so as not to exclude children that wished to participate.

MATERIALS

Across conditions, yellow and green wristbands were used to demarcate novel social groups. Each child was provided with a plastic bag of materials including a yellow string, a green string and three colors of beads – yellow (in-/out- group color), green (in-/out- group color), and orange (distractor color). Each color of bead included two star

shaped beads, two heart shaped beads, two circular beads, and two square beads, for a total of 24 beads (see Figure 1). Pencil and paper surveys were used during the post-test questionnaire.

PROCEDURE AND CONDING

Demographic Information by Condition

Children from two afterschool programs participated in this study. One location participated in the ritual condition (n = 34; 14 females; M_{age} = 7 years, 8 months; range = 4 years, 11 months to 11 years, 6 months) and another location participated in the control condition (n = 37; 16 females; M_{age} = 7 years, 2 months; range = 4 years, 2 months to 10 years, 5 months). I ran each condition in different locations to ensure that children in the ritual condition did not transmit information from the social group activities to the control condition. The afterschool program locations were matched for ethnic diversity and SES. In the ritual condition, 76% of children attending the program and in the control condition, 57% of children attending the program were considered economically disadvantaged based on school district records (i.e., eligible for free or reduced-price lunch or other public assistance). The ethnic diversity of the school districts that the afterschool programs reside in was comparable as well. In the ritual condition, the ethnic composition was 69% Hispanic, 19% White, 8% African-American, and 4% other ethnicities based on school district records. In the control condition, the ethnic composition was 62% Hispanic, 27% White, 9% African-American, and 2% other ethnicities based on school district records.

Group Introductions

Across locations and conditions, children were randomly assigned to either the yellow group (n = 17 in the ritual condition, n = 18 in the control condition), or the green group (n = 17 in the ritual condition, n = 19 in the control condition). In both conditions, children had an identical amount of exposure to the language relating to their group. In each condition, the color wristbands were introduced, "In this program, we have two groups of children, the green group and the yellow group! You are in the yellow [green] group. Each day you'll put this on to remind you that you are in the yellow [green] group and you'll take it off at the end of the day. Neither group is better than the other; there are just two separate but equal groups. Now each color group is going to use their objects in the special way. I want the yellows to learn together over here, and the greens to learn together over there. Yellow group line up to get your objects, and green group line up to get your objects." In each condition, children were presented with the identical bags of beads and string (described in Materials, see Figure 1).

Social Group Activity

Across conditions, children wore colored wristbands of their in-group daily for two weeks. During this period, they participated in six social group activities of their in-group within their condition. A two-week time period was selected in order to allow for repeated exposure to the social group activity. Two confederate adult females (matched for age, ethnicity, and attractiveness), acted as group leaders, supervising each color group, in each condition. The group leader was dressed in a yellow or green t-shirt and a corresponding yellow or green visor. In both the ritual condition and the control

condition, children participated in a social group activity. In both conditions, the same pair of group leaders led the social group activity. In the ritual condition, the social group activity was a ritual task (i.e., scripted group necklace-making task). In the control condition, the social group activity was a non-scripted necklace-making task, using the same materials as the ritual task.

Ritual Condition

In the ritual condition, group leaders for each color group supervised participants in a quiet area of the afterschool program location where there were two lines taped to the floor, one green and one yellow. Color lines were used to organize children into groups (see Figure 2a). Each leader asked their respective color group to sit on the matching colored line and passed out bags of beads and string. Once all children received their bags, the leaders sat down in front of their respective groups and said, "Okay green group, we are going to play with these beads in a special way, the way the green group does it! Watch what I'm doing! [Pick up a green star]. "First, hold up a green string. Then, touch a green star to your head. Then, string on a green star." [Touch a green star to head and string it on. Pick up a green circle]. "Next clap your hands 3 times. Then string on a green circle." [Clap hands 3 times and then string the green circle on. Pick up a green square]. "Next, touch a green square to your head. Then, string on a green square." [Touch a green square to head and string it on. Pick up a green heart]. "Next clap your hands 3 times. Then string on a green heart." [Clap hands 3 times and then string the green heart on. Pick up a green star]. "Next, touch a green star to your head. Then, string on a green star." [Touch a green star to head and string it on. Pick up a green circle].

"Next clap your hands 3 times. Then string on a green circle." [Clap hands 3 times and then string the green circle on. Pick up a green square]. "Next, touch a green square to your head. Then, string on a green square." [Touch a green square to head and string it on. Pick up a green heart]. "Next clap your hands 3 times. Then string on a green heart." [Clap hands 3 times and then string the green heart on]. "Now, take the beads off and do it again!" [Remove beads from string and repeat ritual as scripted]. "Okay, 're all done! You did it the way the green group does it! Good job!" The scripted activity was done in synchrony with the children, was modeled twice per session, and took approximately ten minutes to complete (see Table 1 for a detailed description of the scripted tasks used in the ritual condition by color group). The vast majority of children in the ritual condition made necklaces following the group leader during the ten minute activity period. Children participated in this activity three days a week for two weeks.

Control Condition

In the control condition, group leaders for each color group supervised participants in a quiet area of the afterschool program location where there were two lines taped to the floor, one green and one yellow (the same set up as in the ritual condition, see Figure 2b). Using the same language as in the ritual condition, each leader asked their respective color group to sit on the matching colored line and passed out bags of beads and string. Once all children had received their bags, the leaders sat down in front of their respective groups and said, "Okay yellow [green] group, we are going to play with these beads in a special way, the way the yellow [green] group does it! " [Children engaged in unstructured necklace making and bead stringing]. After ten minutes, children were asked

to put away the beads and bags were collected from them. “Okay, ’re all done! You did it the way the green [yellow] group does it! Good job!” The vast majority of children in the control condition made necklaces during the ten minute activity period. Children participated in this activity three days a week for two weeks. Across conditions, the color group leaders always supervised the social group activity and during the social group activity that differed between conditions, children heard the word “group” three times per session. Across conditions, there were also very high levels of social interaction in both of the color groups throughout the two-week period.

Post-Test Measures

After the two-week period in which children participated in the social group activities, they were interviewed individually by research assistants, who were blind to hypotheses and did not serve as group leaders. All children completed a post-test questionnaire consisting of an in-group affiliation measure, an expectation for group inclusion measure, a group fusion measure, and in the ritual condition, were tested on memory of the in-group ritual.

In-group Affiliation Measure

Children were presented with an in-group affiliation measure consisting of four questions about their affiliation with members of their in-group versus the out-group: an in-group membership question, an in-group identification question, an in-group preference question, and an in-group privilege question.

In-Group Membership Question

For the in-group membership question, children were asked, “If you could change the color of your wristbands, would you change it or would you keep it the same?”

In-Group Preference Question

For the in-group preference question, children were asked, “If a new student came to your class, and your teacher let them pick a color group, would they want to pick the green group or the yellow group?”

In-Group Privilege Question

For the in-group privilege question, the children were told, “’re doing this at another afterschool program, and they need to know who you think should be group helpers.” Then they were asked, “Should it be a kid from the green group, or a kid from the yellow group?”

In-Group Identification Question

For the in-group identification question, children were told, “Thank you for helping us out. We’re passing out hats once everyone is done.” Then they were asked, “Would you like a green or a yellow hat?”

In-Group Affiliation Measure Coding

For each answer favoring their in-group, children were given a score of 1. For each answer favoring the out-group, they were given a score of 0. Each question was designed to assess in-group affiliation and I did not have unique predictions about each question by condition, so the data were analyzed as a composite score.

Expectations for Group Inclusion Measure

To assess group expectations for inclusion, children were told: "Imagine that on the playground, a group of yellow [green] kids is playing a really fun looking new game you have never played before. Do you think the yellow [green] kids would let you join in?" They answered this question using a 5-point scale ranging from 1 ("no, not at all") to 5 ("yes, definitely"). All children completed the group expectations scale for both the green and yellow group. Thus, each child had an expectation for in-group inclusion score for their own color group and an expectation for out-group inclusion score for the other color group. Scores of greatest group inclusion were given a score of 5, scores of least group inclusions were given a score of 1 (range 1-5) (see Figure 3).

Group Fusion Measure

To assess group fusion, children were presented with a 5-point scale of identity fusion to assess the degree to which they felt they belonged to their color group (see Aron, Aron, & Smollan, 1992 for fusion scales). For each color group, children were shown a series of 5 circle drawings, with large colored circles indicating the group, and small grey smiley-faces indicating the child. The drawings depicted an increasing sense of inclusion within the group (see Figure 4). For example, in the first drawing, the smiley face and the colored circle were completely separate, whereas in the fifth drawing, the smiley face was centered inside the colored circle. Children were told, "You are the smiley face and the yellow [green] circle is the yellow [green] group." Then they were asked, "Which of these pictures best shows how you fit with the yellow [green] group?" Then the research assistant pointed to the first circle and asked, "Do you feel separate

from the group?" Then the research assistant pointed to the last circle and asked, "Do you feel a part of the group?" Finally, the research assistant pointed to the middle three circles and asked, "Or do you feel somewhere in between?" Similar to the expectation for group inclusion measure, all children completed the group fusion scale for both the green and yellow groups. Thus, each child had a group fusion score for their in-group (i.e., their own color group) and their out-group (i.e., the other color group). Scores of greatest group fusion were given a score of 5, scores of least group fusion were given a score of 1 (range 1-5).

In-Group Ritual Memory Measure

In the ritual condition, memory of the in-group ritual was assessed. Children were presented with the same bag of beads and string that they used during the social group activity (see Materials and Figure 1). Children were asked, "Do you remember how the yellow [green] group does it? Do it how the yellow [green] group does it!"

Memory of In-Group Ritual Measure Coding

Children's bead stringing actions were transcribed and coded for which beads they used (color and shape) and in what order. Children received a 1 for each correct bead (color and shape) in the sequence and a 0 for each incorrect action as compared to the ritual social group activity led by their in-group leader. This produced a summary score ranging from 0 to 16 (8 beads and 8 gestures) to measure memory of the in-group ritual. See Table 4 for a complete list of the sub-components of the in-group ritual memory score.

Attendance Records

Detailed attendance records were kept for the number of days wristbands were worn (out of 10) and the number of social groups activities attended (out of 6). An independent samples t-test indicated that there was no difference in the number of days children wore wristbands between the ritual condition (M = 8.00, SD = 2.09, range = 6-10 days) and the control condition (M = 8.57, SD = 1.26, range = 3-10 days), $t(53.27) = -1.37$, $p = .176$. An independent samples t-test indicated that there was no difference in the number of days children participated in the social group activity in the ritual condition (M = 4.12, SD = 1.51, range = 2-6 days) and the control condition (M = 4.57, SD = 1.41, range = 2-6 days), $t(67.29) = -1.30$, $p = .200$.

Chapter 3: Results

OVERVIEW OF DATA ANALYSES

I analyzed children's responses to test hypotheses concerning the effects of experimental condition (i.e., ritual versus control) on dependent variables related to children's preferences for in-group members. (i.e., in-group affiliation, expectations for group inclusion, and group fusion). Across measures, I analyzed the effect of condition on the dependent variables, but looked for potential covariates in attendance and age, as well as effects of sex and color group. In the ritual condition, I measured memory of the in-group ritual and assessed if memory correlated with in-group affiliation, expectaitons for gropu inclusion, and group fusion.

IN-GROUP AFFILIATION MEASURE

A composite score was created by summing the individual scores of each in-group affiliation question (0-4). Each question was designed to assess aspects of in-group affiliation and I did not have unique predictions about each question by condition, so the data were analyzed as a composite score.

Children's in-group affiliation was analyzed using a one-way analysis of covariance (ANCOVA) with the in-group affiliation composite score as the dependent variable, condition (2: ritual and control) as the independent variable, and attendance (of social group activities) as the covariate. A preliminary analysis evaluating the homogeneity of slopes assumption indicated that the relation between attendance and in-group affiliation did not differ significantly as a function of condition, $F(1, 67) = 3.35$, $p = .072$, partial $\eta^2 = .05$. Levene's test was not significant, $F(1, 69) = 0.01$, $p = .938$,

indicating that the assumption of homogeneity of variance was not violated. The ANCOVA revealed a significant effect of condition after accounting for attendance, $F(1, 68) = 4.54$, $p = .037$, partial $\eta^2 = .06$ (see Figure 5). Overall, children in the ritual condition had higher affiliation composite scores than children in the control condition (see Table 2 for observed and adjusted means and standard deviations). Attendance was significantly related to in-group affiliation, $F(1,68) = 6.25$, $p = .015$, partial $\eta^2 = .08$.

Children's in-group affiliation composite scores in the control condition significantly differed from chance, $t(36) = 3.17$, $p = .003$. There were also no significant effects on in-group affiliation by group color (i.e., yellow versus green) ($t(66.82) = 1.33$, $p = .187$) or sex ($t(64.96) = -0.87$, $p = .387$) (see Table 2 for means and standard deviations). A simple linear regression showed age (in months) was not a significant predictor of in-group affiliation, $F(1, 69) = 0.74$, $p = .392$.

The percentage of occurrences of selecting the in-group for each sub-component (i.e., in-group membership, in-group preference, in-group privilege, and in-group identification) of the in-group affiliation composite score by condition can be found in Table 3. The likelihood of selecting the in-group did not differ by condition for each of the sub-components.

EXPECTATIONS FOR GROUP INCLUSION MEASURE

All children completed the group expectations scale for both the green and yellow group. Thus, each child had an expectation for in-group inclusion score for their own color group and an expectation for out-group inclusion score for the other color group.

Expectations for In-Group Inclusion

To assess whether children's expectations for inclusion by new members of their in-group was influenced by the experimental manipulation, an independent samples t-test was run with condition as the independent variable and the in-group expectation for inclusion score as the dependent variable. The result revealed that children's expectations for in-group inclusion scores in the ritual condition did not differ from the control condition, $t(68.64) = 0.19$, $p = .852$ (see Table 2 for means and standard deviations, see Figure 6). There were also no significant effects on expectations for in-group inclusion by group color (i.e., yellow versus green) ($t(65.96) = -0.51$, $p = .612$) or sex ($t(60.46) = -0.06$, $p = .955$) (see Table 2 for means and standard deviations). A simple linear regression showed age (in months) ($b = -.006$, $t(68) = -0.68$, $p = .498$) and attendance (of social group activities) ($b = -.078$, $t(68) = -0.68$, $p = .500$) were not significant predictors of expectations for in-group inclusion.

Expectations for Out-Group Inclusion

Similar to expectations for in-group inclusion, there were no significant differences between children's expectations for out-group inclusion in the ritual condition and the control condition, $t(67.82) = -0.78$, $p = .437$ (see Table 2 for means and standard deviations, see Figure 6). There were no significant effects on expectations for out-group inclusion by group color (i.e., yellow versus green), $t(67.72) = 0.95$, $p = .345$ and sex ($t(61.89) = -0.09$, $p = .931$) (see Table 2 for means and standard deviations). A simple linear regression found age (in months) ($b = -.008$, $t(68) = -1.04$, $p = .301$) and attendance

(of social group activities) (b = -.117, $t(68)$ = -1.08, p =.284) were not significant predictors of expectations for out-group inclusion.

Comparing Expectations for In-Group Inclusion to Out-Group Inclusion Between Conditions

To assess the relationship between children's expectation for in-group inclusion scores to expectations for out-group inclusion scores, separate paired samples t-tests were run by condition, with expectation for group inclusion score as a the dependent variable and group (in-group versus out-group) as the independent variable. In the ritual condition, children's expectation for in-group inclusion scores were significantly higher than out-group inclusion scores, $t(33) = 2.76$, $p = .009$. In the control condition, children's expectation for in-group inclusion scores did not differ from out-group inclusion scores, $t(36) = 1.82$, $p = .08$, $d = 0.59$. See Table 2 for means and standard deviations.

GROUP FUSION MEASURE

All children completed the group fusion scale for both the green and yellow group. Thus, each child had an in-group fusion score for their own color group and an out-group fusion score for the other color group.

In-Group Fusion

To assess whether children's in-group fusion was influenced by the experimental manipulation, an independent samples t-test was run with condition as the independent variable and the in-group fusion score as the dependent variable. The result revealed that children's in-group fusion scores in the ritual condition did not differ from the control condition, $t(66.19) = 1.23$, $p = .224$ (see Table 2 for means and standard deviations, see

Figure 7). There were no significant effects on in-group affiliation by group color (i.e., yellow versus green) ($t(68.52) = -0.27$, $p = .790$) or sex ($t(67.84) = -0.06$, $p = .956$) (see Table 2 for means and standard deviations). A simple linear regression showed age (in months) ($b = .003$, $t(68) = 0.34$, $p = .735$) and attendance (of social group activities) ($b = -.110$, $t(68) = -0.93$, $p = .356$) were not significant predictors of in-group fusion.

Out-Group Fusion

Similar to in-group fusion, there were no significant differences between children's out-group fusion scores in the ritual condition and the control condition, $t(68.92) = 0.74$, $p = .464$ (see Table 2 for means and standard deviations, see Figure 7). There was no significant effect on out-group fusion scores by group color (i.e., yellow versus green) ($t(68.73) = -0.05$, $p = .959$) (see Table 2 for means and standard deviations). A simple linear regression found age (in months) ($b = -.003$, $t(68) = -0.29$, $p = .770$) and attendance (of social group activities) ($b = .063$, $t(68) = 0.06$, $p = .642$) were not significant predictors of out-group fusion. However, there were sex differences on out-group fusion scores, $t(68.92) = 2.82$, $p = .004$, $d = 0.69$, where males felt more fused with the out-group than females (see Table 2 for means and standard deviations). Further analysis revealed that these sex differences were only found in the ritual condition, $t(30.21) = 2.40$, $p = .018$, $d = 1.07$, where males had higher out-group fusion scores ($M = 3.90$, $SD = 1.68$) than females ($M = 2.79$, $SD = 0.89$). These sex differences were not evidenced in the control condition, $t(33.78) = 1.78$, $p = .084$.

Comparing In-Group Fusion to Out-Group Fusion Between Conditions

To assess the relationship between children's in-group fusion scores to out-group fusion scores, separate paired samples t-tests were run by condition, with group fusion score as a the dependent variable and group (in-group versus out-group) as the independent variable. In the ritual condition, children's in-group fusion scores were marginally higher than out-group fusion scores, $t(33) = 1.83$, $p = .076$. In the control condition, children's in group fusion scores did not differ from out-group fusion scores, $t(36) = 1.17$, $p = .251$. See Table 2 for means and standard deviations.

In-Group Ritual Memory Measure

Pearson product-moment correlation coefficients were computed to assess the relationship between children's in-group ritual memory scores and the other post-test measures (i.e., in-group affiliation composite scores, expectations for group inclusion scores, and group fusion scores) in the ritual condition (n = 34). There were no significant correlations between children's in-group ritual memory scores and in-group affiliation composite scores ($r(32) = .14$, $p = .454$), expectations for out-group inclusion scores ($r(32) = -.04$, $p = .842$), in-group fusion scores ($r(32) = .01$, $p = .947$), and out-group fusion scores ($r(32) = -.07$, $p = .719$). There was a marginal positive correlation between in-group ritual memory scores and expectations for in-group inclusion scores, $r(32) = .30$, $p = .089$.

There were no significant effects on memory by group color ($t(30.12) = -0.44$, $p = .661$) or sex ($t(28.76) = 0.54$, $p = .589$) (see Table 2 for means and standard deviations). A simple linear regression showed age (in months) ($b = .107$, $t(30) = 2.73$, $p = .01$) was a

significant predictor of memory, but attendance (of social group activities) was not (b = .34, $t(30) = 0.61$, p =.545). Table 4 shows the percentage of occurrences of actions in the in-group ritual memory score by color group.

Chapter 4: Discussion

THE CURRENT STUDY

The findings from this study shed light on how rituals facilitate in-group cohesion in early childhood. Results from converging measures are consistent with the hypothesis that ritual increases preferences for in-group members (in terms of in-group affiliation, expectations for group inclusion, and group fusion) to a greater degree than group membership alone, though these effect sizes are small. In this study, memory of the in-group ritual did not reliably correlate with the measures of in-group preference, but alternative explanations for this will be provided.

As predicted, the experience of participating in a ritual (ritual condition) increases children's in-group affiliation to a greater degree than group membership alone (control condition), when you account for the amount of experience with the social group activity (attendance). Also children's in-group affiliation was higher in the control condition than chance, ensuring that this study effectively used a minimal groups paradigm. This provides evidence consistent with the proposal that rituals facilitate in-group cohesion in early childhood, though the effect sizes are small. Because I was not able to ensure 100% attendance rates at all of the social group activities, attendance varied greatly in amount of time (ranging from 3-10 days) and frequency (e.g., children did not necessarily attend consecutive social group activity days). In future research, I would be interested in manipulating the number of rituals and the frequency of ritual participation to examine time effects on in-group preferences (e.g., how few rituals and how often rituals need to

be participated in in order to sufficiently increase in-group preferences over group membership alone).

The current data support that ritual participation (ritual condition) increases children's expectations for group inclusion by the in-group over the out-group, not found when experiencing social group activities alone (control condition), though the effect sizes are small. However, if you examine each of the group inclusion scores separately, you do not find conditional differences. Children's expectations for in-group inclusion did not differ when participating in a ritual versus group membership alone. Children's expectations for out-group inclusion also did not differ by condition. It's possible that ritual participation did not enhance expectations for both in-group and out-group inclusion individually. Alternatively, the likert scales used may not have adequately measured children's feelings towards the groups, as the means across conditions were very close to ceiling-level (out of 5). Future research with multiple measures examining children's expectations for group inclusion could examine this more thoroughly.

Similarly, the likert scales used in the group fusion measure may not have adequately measured children's fusion with the in-group and out-group. Though current data found that ritual participation (ritual condition) marginally increases children's fusion with the in-group over the out-group, there were no differences by condition on in-group fusion and out-group fusion individually. Group fusion scores were also close to ceiling levels (out of 5). Future research with a better training on likert scales and specifically the group fusion scale (e.g., ensuring children understand the ven diagram nature of the scale), as well as the use of multiple measures could examine this more

thoroughly. Also, the data show males fused more with their out-groups than females, but closer analysis revealed this was only evidence in the ritual condition. I find it unlikely that some aspect of out-group fusion differentially effects males over females, but a higher-powered sample size would be necessary to closer examine this. Alternatively, it is possible at the specific site where the ritual condition data were collected, though the children were randomly assigned to color groups, males may have been assigned to groups separate from their friends. Thus, if these male participants were in one group and their friends were in out-group, they may indicate that they fused higher with the out-group. Alternatively, the opposite could be said about the females. It is quite possible that even though females were randomly assigned to the color groups, they may have previously disliked members of their out-group. Thus, if these female participants were in one group and they previously disliked out-group members, they may indicate that they fused lower with the out-group.

Additionally, children's memory of the in-group ritual (in the ritual condition) was correlated with the measures of in-group preference. Children's memory did not correlate with in-group affiliation, expectations for out-group inclusion, in-group fusion, nor out-group fusion. There was a marginal correlation between memory and expectations for in-group inclusion. Memory scores were relatively high because of the frequency and duration of the ritual participation. In order to understand if memory correlated with in-group preferences, a higher-powered sample size is necessary. Unsurprisingly, age was a significant predictor of memory. Future research could also examine how ritual frequency and memory predict measures of in-group preference.

RITUALS FACILIATE IN-GROUP COHESION

The role of ritual in enhancing group cohesion has received little empirical attention to date, in part because the complexity and historical diversity of the world's ritual traditions have impeded the identification of common key features of ritualistic behavior (Rossano, 2012). This has made it difficult to establish robust generalizations about the causes and effects of these features in isolation or interaction. Rituals have also been studied almost exclusively with qualitative designs (but see Legare & Souza, 2012, 2014; Norton & Gino, 2014; Vohs et al., 2013 for exceptions), limiting strong causal inferences about rituals' impact on human cognition and behavior (Rossano, 2012). Examining the development of ritual has important implications for understanding the ontogeny of cultural learning in childhood (Herrmann, et al. 2013; Legare et al., in press; Watson-Jones, et al. 2014) as well as for informing our understanding of the evolution of social cognition in humans (Brewer, 2007; Caporael, 1997; Kurzban & Neuberg, 2005; Richerson & Boyd, 2005).

I propose that examining the psychological effects of ritual in the context of children's social groups informs our understanding of the empirically documented and early developing human tendency to prefer in-group members to out-group members (Legare & Watson-Jones, in press). Results from converging measures are consistent with the hypothesis that ritual increases preferences for in-group members (in terms of in-group affiliation, expectations for group inclusion, and group fusion) over group membership alone, though the effect sizes are small. While the current results provide some novel empirical evidence for the effects of participating in a ritual on children's

preferences for in-group members, more research is needed to experimentally manipulate different features of ritual to examine its effects on psychological outcomes.

There are several frequently co-occurring features of rituals that I hypothesize make ritual an ideal candidate for amplifying social group affiliation and cohesion. Rituals are socially scripted, frequently accompanied by conventional language, and involve social group coordination and behavioral synchrony. In the current study, rather than attempt to examine the effects of each of these features on in-group preferences independently, my objective was to examine whether participating in a ritual impacts in-group affiliation to a greater extent than group membership alone. The extent to which particular features of ritual individually contribute to the documented effects on in-group preferences is a topic I am examining in ongoing research.

New psychological evidence does suggest that because rituals involve shared experiences among group members, they may provide a mechanism by which the self becomes "fused" with both relational and collective groups (Atkinson & Whitehouse, 2011; Swann, Gomez, Seyle, Morales, & Huici, 2009; Swann et al., 2012). This means that highly fused individuals can experience a feeling of 'oneness' with the group that promotes acting for the group the same as one would act for one's self (Swann et al., 2012). Because rituals involve shared experiences among group members that often require personal sacrifice (Atkinson & Whitehouse, 2011; Whitehouse, 1995, 2000, 2004), rituals may contribute to increased social cohesion (Whitehouse & Lanman, 2014). Engaging in synchronous movement (even synchronous singing) increases cooperation, self-reported feelings of connection to group members, and increased trust

of group members (Cohen, Ejsmond-Frey, Knight, & Dunbar, 2010; Konvalinka et al., 2011; Reddish, Fischer, & Bulbulia, 2013; Wiltermuth & Heath, 2009). Discovering the psychological foundations of ritual is necessary for understanding how rituals facilitate in-group cohesion and identity formation as well as the extent to which they may contribute to bias against out-group members.

Rituals provide a solution to one of the greatest challenges of social group living, the problem of coordinated and cooperative group action (Tooby et al., 2006). Due to the importance of group membership for our cultural species, I propose that humans are prepared to engage in socially stipulated, conventional behavior such as ritual as a means of in-group affiliation. Human psychology is thus geared to motivate individuals to engage in behaviors that increase their inclusion with their social groups (Legare & Watson-Jones, in press). The capacity to engage in ritual is a psychologically-prepared, culturally-inherited, behavioral trademark of our species. The data support the hypothesis that the experience of participating in a ritual increases preferences for in-group members to a greater degree than group membership alone and provide evidence consistent with the proposal that rituals facilitate in-group cohesion in early childhood.

LIMITATIONS AND FUTURE DIRECTIONS

The current results provide evidence from converging measures for selective effects of ritual participation on children's in-group preferences, yet many interesting possibilities for future studies remain. I examined the cumulative effects of multiple co-occurring features of ritual (frequency, time, synchrony, coordination, language) on children's in-group preferences. Due to the nature and time intensity of the data

collection, I was not able to examine the extent to which individual features of ritual contribute to these documented effects on in-group preferences. In future research, it would be interesting to experimentally manipulate different individual features of ritual in a controlled laboratory setting. For example, I would be interested in manipulating ritual frequency and duration to see how little ritual participation is sufficient to increase in-group preferences. It would also be interesting to manipulate group size to examine if participating in a larger or smaller group amplifies children's in-group preferences. Additionally, it would be interesting to examine the effects of participating in coordinated synchronous behavior on children's in-group preferences.

Though the current study examined the selective effects of ritual participation on children's in-group preferences, more research is needed to further examine the relationship between ritual and out-group effects. Although the data did not show conditional effects on out-group measures), there may be multiple explanations for this. One possibility is that the effects of ritual are unique to reasoning about in-group members (or out-group members in relation to in-group members). If this is the case, the effects of ritual on out-group measures may not be different from the experience of social group membership alone. Another possibility is that the experimental paradigm used in this study was not sufficient to trigger substantial out-group bias. Future research with additional measures could examine the conditions under which out-group bias can be detected.

All students attending the afterschool program were recruited and I collected data from all consented individuals, so as not to exclude children that wished to participate.

Due to the nature of this data collection, I had a large age range of children (4-11-years-old). Though age was not found to be a significant predictor of determining in-group affiliation, expectations for group inclusion, nor group fusion, a larger sample size that could analyze groups of younger and older children might find different patterns of in-group preferences across development.

Appendix

Figure 1: Materials used in social group activity and post-test questionnaire. Each child was provided with a plastic bag of materials including a yellow string, a green string and three colors of beads – yellow (in-/out- group color), green (in-/out- group color), and orange (distractor color). Each color of bead included two star shaped beads, two heart shaped beads, two circular beads, and two square beads, for a total of 24 beads.

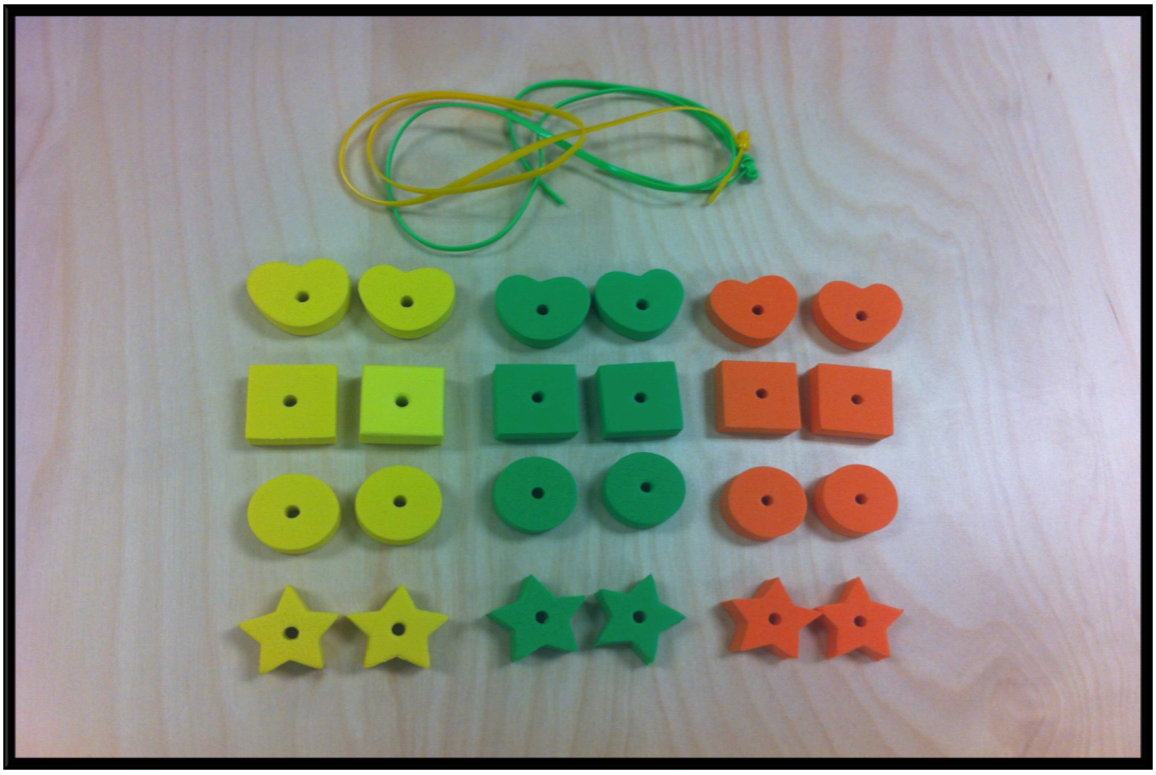

Figure 2: Study sites by condition. Group leaders for each color group supervised participants in a quiet area of the afterschool program where two lines were taped on the floor (green and yellow) in both the (a) ritual condition and (b) control condition.

a)

b)

Figure 3: Expectation for Group Inclusion Measure. Five-point scale given to children to assess expectations for group inclusion by the green and yellow groups.

Imagine that on the playground, a group of green kids is playing a really fun looking new game you have never played before.

	No, Not at all	Probably Not	Maybe	Probably	Yes, Definitely
5. Do you think the green kids would let you join in?	O	O	O	O	O

Imagine that on the playground, a group of yellow kids is playing a really fun looking new game you have never played before.

	No, Not at all	Probably Not	Maybe	Probably	Yes, Definitely
6. Do you think the yellow kids would let you join in?	O	O	O	O	O

Figure 4: Group Fusion Measure. Five-point scale given to children to assess fusion with the green and yellow groups.

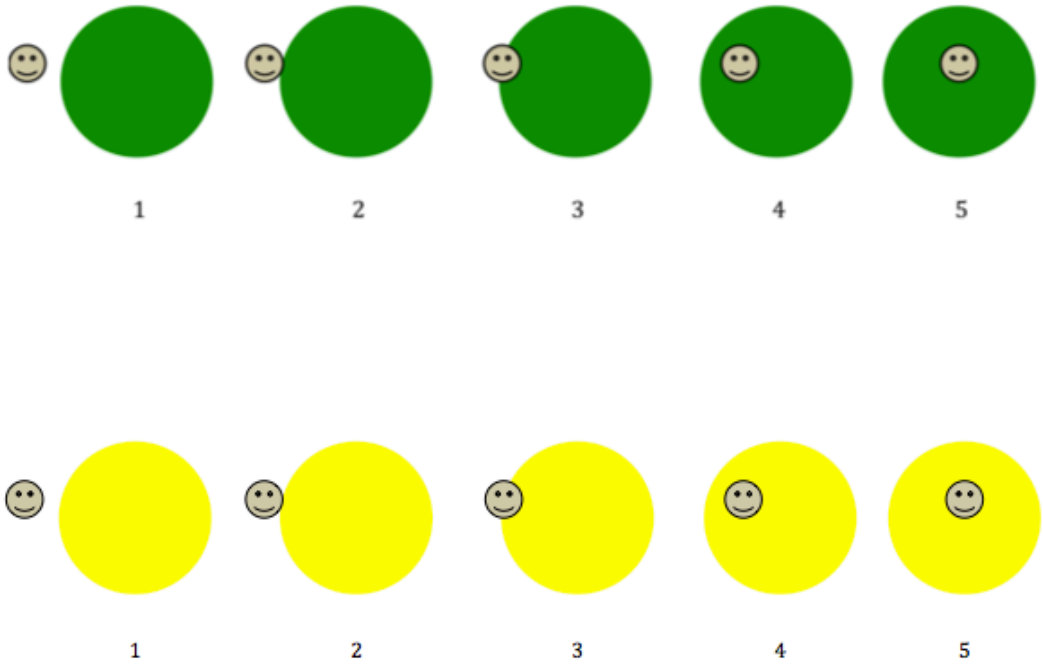

Figure 5: Mean in-group affiliation composite score by condition. Error bars represent 95% confidence intervals. An ANCOVA revealed a significant effect of condition after accounting for attendance, $F(1, 68) = 4.54$, $p = .037$, partial $\eta^2 = .06$, *$p < .05$.

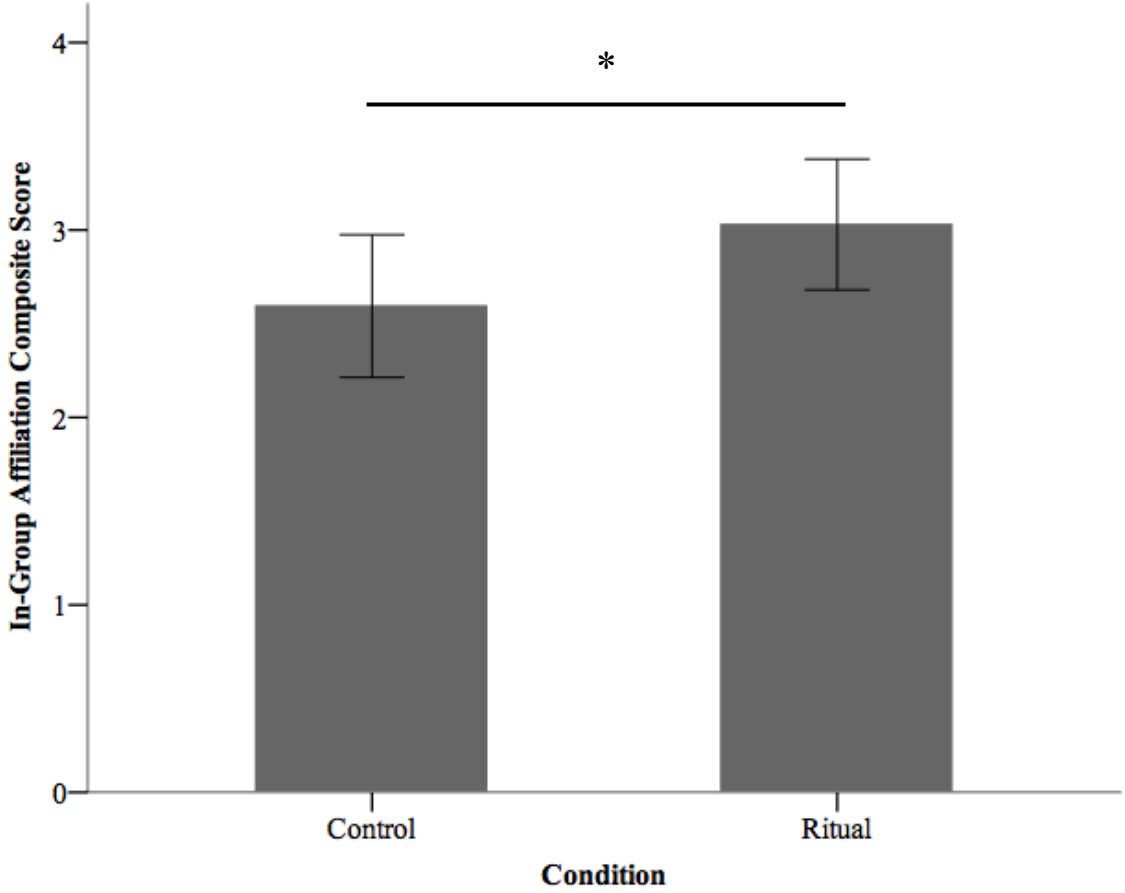

Figure 6: Mean expectation for group inclusion scores (in-group and out-group) by condition. Error bars represent 95% confidence intervals. **p< .01.

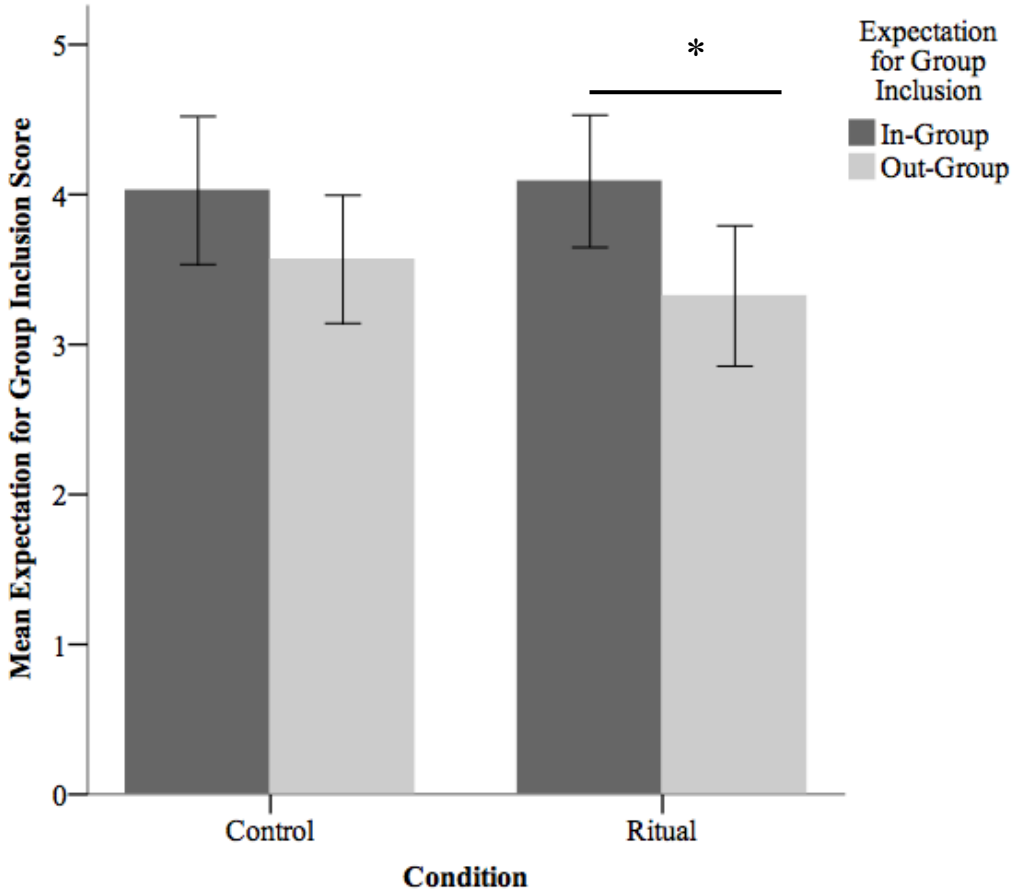

Figure 7: Mean group fusion scores (in-group and out-group) by condition. Error bars represent 95% confidence intervals.

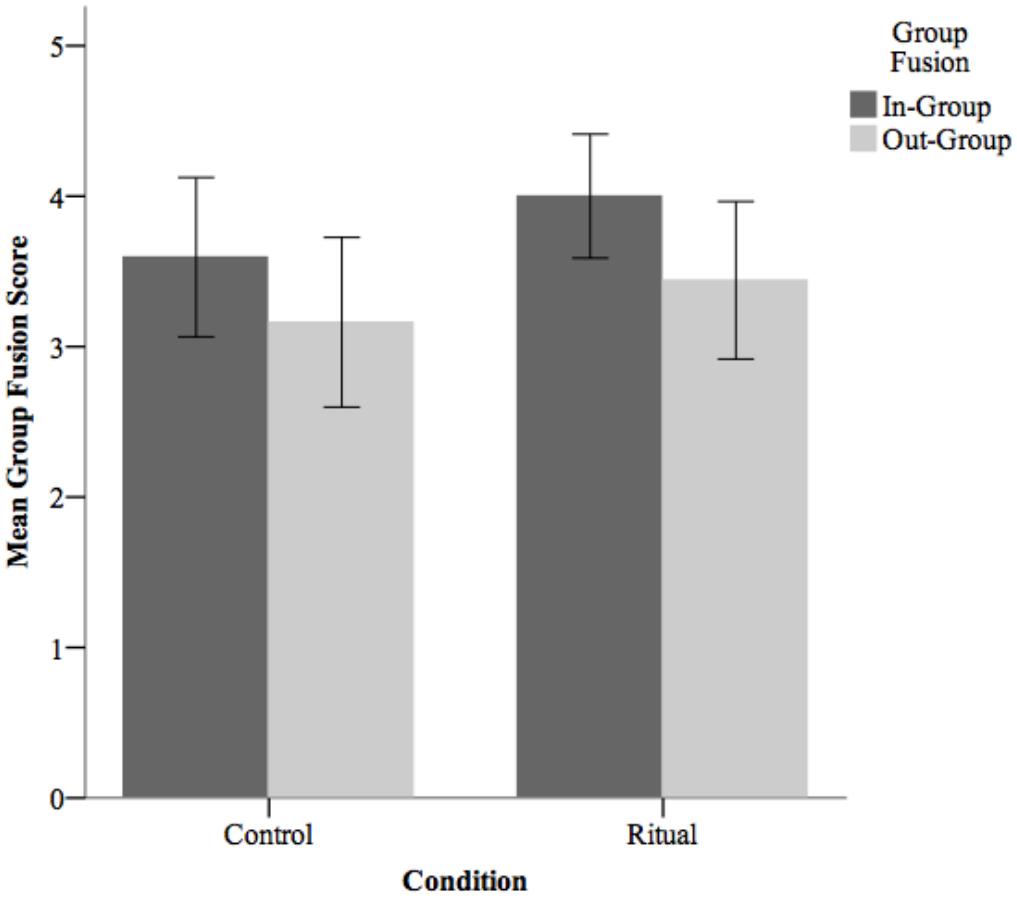

Table 1: Ritual condition group leader actions by color group. Structured play task for the green and yellow groups in the ritual condition (each group repeated the sequence twice).

Order of Action	Green Group		Yellow Group	
	Bead	Gesture	Bead	Gesture
1st		Touch Star to Forehead		3 Hand Claps
2nd	String Star		String Square	
3rd		3 Hand Claps		Touch Heart to Forehead
4th	String Circle		String Heart	
5th		Touch Square to Forehead		3 Hand Claps
6th	String Square		String Star	
7th		3 Hand Claps		Touch Circle to Forehead
8th	String Heart		String Circle	

Table 2: Descriptive statistics for post-test measures (In-Group Affiliation Composite Score, Expectation for Group Inclusion Scores, Group Fusion Scores, and In-Group Ritual Memory Score). Standard deviations indicated in parentheses.

		Observed Means	Adjusted Means	Observed Means				
		In-group affiliation composite score (out of 4)		Expectations for in-group inclusion score (out of 5)	Expectations for out-group inclusion score (out of 5)	In-group fusion score (out of 5)	Out-group fusion score (out of 5)	In-group Ritual Memory Score (out of 16)
Condition	Ritual	3.03 (1.00)	3.08 (1.04)	4.09 (1.26)	3.32 (1.34)	4.00 (1.18)	3.44 (1.50)	8.97 (5.09)
	Control	2.59 (1.14)	2.55 (1.05)	4.03 (1.48)	3.57 (1.28)	3.60 (1.59)	3.16 (1.69)	N/A
Color Group	Yellow	2.63 (1.17)	N/A	3.97 (1.50)	3.60 (1.19)	3.74 (1.46)	3.29 (1.64)	9.35 (5.70)
	Green	2.97 (1.00)	N/A	4.14 (1.25)	3.31 (1.41)	3.83 (1.38)	3.31 (1.58)	8.56 (4.50)
Sex	Female	2.93 (1.05)	N/A	4.07 (1.23)	3.47 (1.33)	3.80 (1.47)	2.70 (1.21)	8.38 (4.61)
	Male	2.71 (1.12)	N/A	4.05 (1.48)	3.44 (1.30)	3.78 (1.39)	3.73 (1.72)	9.35 (5.46)

Table 3: In-group affiliation composite score sub-component analysis. Percentage of occurrences of selecting the in-group for each sub-component of the in-group affiliation composite score by condition. Adjusted standardized residuals appear in parentheses after observed percentages.

In-Group Affiliation Score Sub-Components	Condition			
	Control	Ritual	χ^2	*p*-value
In-group membership	64.9% (-0.8)	73.5 % (0.8)	0.62	.430
In-group preference	56.8% (-0.4)	67.6% (0.4)	0.89	.345
In-group privilege	73.0% (-1.3)	85.3% (1.3)	1.61	.204
In-group identification	64.9% (-1.1)	76.5% (1.1)	1.15	.284

Table 4: In-group ritual memory score sub-component analysis. Percentage of occurrence of actions in the in-group ritual memory score by color group in the ritual condition. Adjusted standardized residuals appear in parentheses after observed percentages.

Order of Action	Green Group		Yellow Group			
	Action	% of occurrence	Action	% of occurrence	χ^2	*p*-value
1st	Touch Star to Forehead	81.3 (2.0)	3 Hand Claps	47.1 (-2.0)	4.16	.041
2nd	String Star	75.0 (-0.5)	String Square	82.4 (0.5)	0.27	.606
3rd	3 Hand Claps	50.0 (-0.2)	Touch Heart to Forehead	52.9 (0.2)	0.03	.866
4th	String Circle	75.0 (-0.1)	String Heart	76.5 (0.1)	0.01	.922
5th	Touch Square to Forehead	37.5 (-0.9)	3 Hand Claps	52.9 (0.9)	.793	.373
6th	String Square	56.3 (-0.5)	String Star	64.7 (0.5)	0.25	.619
7th	3 Hand Claps	25.0 (-1.0)	Touch Circle to Forehead	41.2 (1.0)	.971	.325
8th	String Heart	75.0 (0.6)	String Circle	64.7 (-0.6)	0.41	.520
9th	Touch Star to Forehead	37.5 (-0.2)	3 Hand Claps	21.2 (0.2)	0.05	.829
10th	String Star	62.5 (-0.5)	String Square	70.6 (0.5)	0.24	.622
11th	3 Hand Claps	25.0 (-1.0)	Touch Heart to Forehead	41.2 (1.0)	0.97	.325
12th	String Circle	62.5 (-1.3)	String Heart	82.4 (1.3)	1.64	.201
13th	Touch Square to Forehead	25.0 (-1.0)	3 Hand Claps	41.2 (1.0)	0.97	.325
14th	String Square	68.8 (0.2)	String Star	64.7 (-0.2)	0.06	.805
15th	3 Hand Claps	12.5 (-1.8)	Touch Circle to Forehead	41.2 (1.8)	3.42	.065
16th	String Heart	87.5 (1.2)	String Circle	70.6 (-1.2)	1.41	.235

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